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Effect of depressive and anxiety symptoms during pregnancy on risk of obstetric interventions

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Abstract

Aim: The effect of prenatal mental health on the risk of obstetric interventions is unclear. The present study examined the associations between depressive and anxiety symptoms in the second and third trimesters and mode of delivery, epidural use and labor induction in a large community-based pregnancy cohort, in Alberta, Canada.

Material and Methods: Women who had singleton pregnancies, delivered in hospital, and had medical data were selected ($n = 2825$). Obstetric intervention data were obtained from the medical records, and depressive and anxiety symptoms were measured by the Edinburgh Postnatal Depression Scale and the Spielberger State Anxiety Inventory. Data were evaluated with multivariate multinomial and logistic regression analyses using a hierarchical modeling.

Results: After accounting for factors known to increase the risk of each intervention, including demographic variables, smoking, hospital site, gestational age, previous history of cesarean delivery, prepregnancy body mass index, assisted conception, and antepartum risk score, the only mental health variable associated with obstetric interventions was depressive symptoms in the third trimester, which increased the risk of emergency cesarean delivery (adjusted odds ratio, 2.04; 95% confidence interval, 1.26–3.29). No associations were found between antenatal depressive and anxiety symptoms and other obstetric interventions.

Conclusion: The present findings support an association between depressive symptoms and adverse obstetric outcomes and suggest that anxiety and depression may have different effects on obstetric outcomes. Understanding the mechanism in which depression increases the risk of emergency cesarean birth needs further research.

Key words: cesarean delivery, obstetric interventions, prenatal mental health, risk factors.

Introduction

The World Health Organization suggests a lower limit of 5% and upper limit of 15% for cesareans performed for both maternal and fetal reasons.[1] However, the rates of cesarean delivery in most industrialized countries remain above this threshold. In Canada, between 1996 and 2005, the rate of total cesarean delivery increased from 18% to 26%. During this period, the rate of primary cesarean delivery also increased from 12% to 19%.[2] Although the contribution of biological factors, such maternal age and BMI, to these trends has been well studied in the published reports,[3–5] more research is needed to understand the effect of psychosocial factors, such as maternal mental health. Depression and anxiety are common during pregnancy. In a

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meta-analysis of 21 studies, the prevalence of depression during pregnancy was 7.4% in the first trimester, 12.8% in the second semester, and 12.0% in the third trimester.[6] Anxiety is more prevalent than depression in the antenatal period. In a prospective study of 300 pregnant women, the frequency of anxiety symptoms ranged from 12% to 18%.[7] Another longitudinal study reported that almost one-third of women experienced anxiety symptoms during pregnancy.[8]

Depression and anxiety can increase the risk of adverse pregnancy and child outcomes, such as preterm birth, stillbirth, and developmental delays in children.[9–14] Maternal mental health may also affect obstetric interventions because depression and anxiety can increase physical distress during pregnancy and increase health-care service use by pregnant women.[15–17] Women who have depression and/or anxiety report more somatic symptoms, such as nausea and vomiting, have more sick leave, and have more visits to clinicians than women who do not have depression and/or anxiety.[15] In addition, poor maternal mental health may interfere with uterine contractions, cause labor dysfunction, and increase the need for obstetric interventions to terminate a complicated labor.[18] Psychological distress may affect maternal confidence for delivery and hinder the progress of labor. Pregnant women who have psychiatric disorders have a higher prevalence of fear of childbirth and lower pain threshold than other women, contributing to increased frequency of cesarean delivery and epidural use during labor.[18]

The association between prenatal mental health and obstetric interventions is unclear in the published reports. Most previous studies that evaluated these associations created a composite risk score that included various obstetric and pregnancy outcomes.[19,20] Therefore, it was not possible to determine which outcomes were related to mental health. More recent studies assessed the relation between specific obstetric outcomes and depression and anxiety, but the findings are mixed and contradictory.[21–24] Systematic reviews about the association between maternal mental health, pregnancy, and obstetric outcomes showed a lack of consistent findings in previous studies, possibly caused by the use of collapsed birth outcome scores, measurement of anxiety or depression at different stages of pregnancy with various scales, and small sample size.[13,25,26] In addition to methodological issues, these differences might be attributed to the varied obstetric practices in different countries. The Alberta health-care system is publicly funded, and cesarean delivery on demand is not offered by most practitioners, similar to the systems in other Canadian provinces. The only mental health indication for an obstetric intervention, presently recommended by the Society of Obstetricians and Gynaecologists of Canada, is the induction of labor to reduce maternal anxiety in women who have a history of intrauterine death in a previous pregnancy.[27] These characteristics provide a suitable context to examine the associations of antenatal mental health and obstetric interventions. The purpose of the present study was to evaluate the association between antenatal mental health and obstetric interventions, including mode of delivery, epidural use, and induction of labor, in a large community-based pregnancy cohort in Canada.

Methods

This study was a secondary analysis of data collected in the All Our Babies (AOB) study, an established longitudinal pregnancy cohort in Alberta, Canada. Participants were recruited between 2008 and 2010 and completed three questionnaires: two questionnaires during pregnancy (at <25 weeks and 34–36 weeks of gestation) and one questionnaire at 4 months post-partum. The AOB consists of prospective questionnaire data about lifestyle, health-care utilization, mental health, social support, birth outcomes, post-partum experiences, and breast-feeding. The study was approved by the Conjoint Health Research Ethics Board of the University of Calgary. At the time of recruitment, participants provided informed consent to link to medical health records for the labor and delivery. Detailed descriptions of the recruitment process, data collection, and questionnaires were reported previously.[28,29] For the present study, women were selected who had singleton pregnancies, delivered in a hospital in Calgary area and had medical data available (2825 women). The process of participant recruitment and main variables selection have been illustrated in Figure 1.

Study variables

The study outcomes included mode of delivery (i.e., vaginal delivery, vaginal delivery assisted by forceps or vacuum, emergency cesarean delivery, elective cesarean delivery), epidural use, and induction of labor. Obstetric interventions data and antepartum risk scores were retrieved from the medical records.

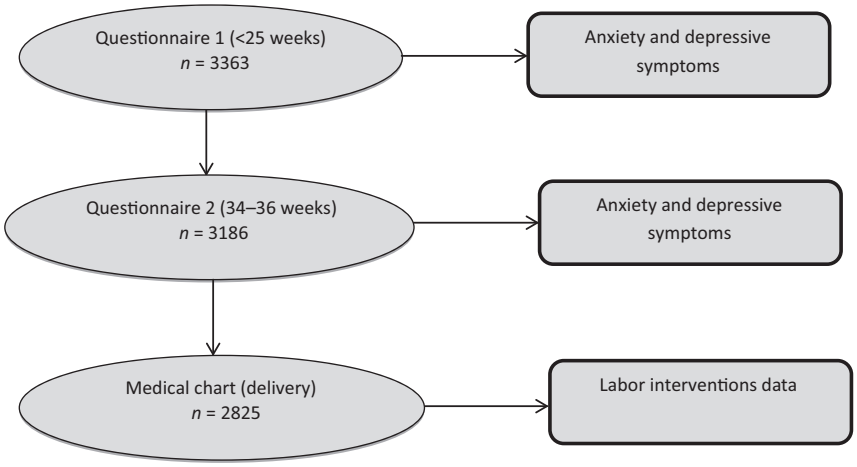

Figure 1 Participant recruitment and main variables selection steps.

Information about demographics, mental health, and other variables were obtained from self-reported questionnaires.

Mental health variables included anxiety and depressive symptoms and were assessed at two time-points during pregnancy (second and third trimester). The Spielberger State Trait Anxiety Inventory (STAI) consists of two subscales: state anxiety and trait anxiety.[30] In the present study, anxiety symptoms were measured by the state subscale of the STAI, which includes 20 items rated on a 4-point Likert scale from 1 (not at all) to 4 (very much so). Total score ranges from 20 to 80. High levels of anxiety were defined by a total score greater than 40. The STAI has acceptable sensitivity, specificity, and predictive values during the perinatal period.[31,32] Depressive symptoms were measured by the Edinburgh Postnatal Depression Scale (EPDS), a 10-item self-reported questionnaire. The scale has high reliability with internal consistency of 0.87.[33] The EPDS has been validated to use in the antenatal period.[34] A score of ≥13 has been recommended for identifying women with symptoms of major depression.[35]

The antepartum risk score is completed on admission for all in-hospital births in Alberta. This risk assessment tool has 39 items to assess preconception health, past obstetric history, and complications of the present pregnancy. Women with risk scores of 0–2 are considered at low risk, with scores of 3–6 at high risk, and those with scores of ≥7 at extreme risk. The validity of this tool to identify women with singleton pregnancies who were at high risk for an adverse pregnancy outcome was confirmed previously.[36] In this tool, various points have been assigned for previous history of cesarean delivery, smoking, and maternal age ≥ 35 years. These factors were already included as independent variables in our analyses; therefore, to avoid the linear effects of these factors on the risk score, the points assigned for these variables were eliminated from the overall antepartum risk score. In the present study, we coded antepartum risk as low risk (score, 0–2) and high risk (score > 2).

Demographic characteristics included maternal age (i.e., <25 years, 25–34 years, ≥35 years), marital status (i.e., married/common-law, single), level of education (i.e., high school or less, some or completed postsecondary), household income (i.e., <$40 000, $40 000–$79 999, ≥$80 000), and ethnicity (i.e., Caucasian, non-Caucasian). Obstetric variables included parity (i.e., nulliparous, multiparous), antepartum risk score (i.e., 0–2, >2), gestational age at delivery (i.e., <37 weeks, 37–40 weeks, >40 weeks), assisted conception, previous history of cesarean delivery, and prepregnancy body mass index (i.e., <18.5 kg/m^2, 18.5–24.9 kg/m^2, 25–29.9 kg/m^2, >30 kg/m^2).

Statistical analysis

Bivariate logistic regression analyses were performed to evaluate the unadjusted associations between obstetric interventions and demographic, obstetric, and mental health variables; variables with $P < 0.10$ were entered into multivariate models. The associations between antenatal mental health and mode of delivery were evaluated with multivariate multinomial regression. Separate multivariate logistic regression analyses were performed to determine the relation between epidural use and induction of labor and antenatal depression and anxiety. A hierarchical modeling strategy was used to develop all multivariate regression models and

the blocks of variables were entered in the following order: demographic variables, obstetric variables, and hospital setting. Mental health variables were entered in all models at the final step, regardless of bivariate statistical significance. The robustness of the final models was evaluated by testing the independent effects of those factors removed from previous blocks. Odds ratios (OR) and 95% confidence intervals (CI) were presented for final models, with statistical significance defined by $P \leq 0.05$. Data analysis was performed with IBM SPSS statistical software.[37]

Results

The characteristics of the sample are described in Table 1. The overall rate of cesarean delivery was 26% (14% emergency and 13% elective cesarean deliveries). Forty-two percent of women received epidural analgesia during labor. The prevalence of assisted vaginal delivery was 7% and induction of labor was 26%. Anxiety symptoms were more prevalent than depressive symptoms both in the second (anxiety, 16%; depression, 7%) and third trimesters (anxiety, 20%; depression, 7%). The main indication for emergency cesarean delivery was fetal heart rate abnormality, and the main indication for elective cesarean delivery was a history of previous cesarean delivery.

Women who had an emergency cesarean delivery had higher rates of depression in the third trimester (10%) than women who had vaginal delivery (6%) or planned cesarean delivery (8%). Bivariate analysis showed that emergency cesarean delivery was associated with anxiety (OR, 1.38; 95%CI, 1.06–1.81) and depression (OR, 1.77; 95%CI, 1.20–2.62) in the third trimester. In addition, emergency cesarean delivery was associated with nulliparity, infertility treatment, previous history of cesarean delivery, obesity, preterm or post-term birth, hospital setting, and high-risk pregnancy. Anxiety and depressive symptoms in the third trimester were not associated with increased risk of elective cesarean delivery and assisted vaginal delivery.

Depressive symptoms in the second trimester were associated with increased risk of elective cesarean delivery (OR, 1.58; 95%CI, 1.07–2.35). Elective cesarean delivery was associated with maternal age ≥ 35 years, marital status, multiparity, infertility treatment, previous history of cesarean delivery, obesity, post-term birth, hospital setting, and antepartum risk score. Mental health variables were not associated with assisted vaginal delivery. Factors related to assisted vaginal delivery included nulliparity, maternal age < 25 years, non-Caucasian ethnicity, previous history of cesarean delivery, obesity, post-term birth, and hospital setting.

Table 1 Sample characteristics ($n = 2825$)

Risk factor	*n* (%)
Maternal age (years)	
• <24	159 (5.6)
• ≥35	600 (21.2)
• 25–34	1861 (65.9)
Ethnicity	
• Non-Caucasian	586 (20.7)
• Caucasian	2224 (78.7)
Income	
• $39,999 or less	221 (7.8)
• $40,000–$79,999	590 (20.8)
• $80,000 or more	1914 (67.8)
Education	
• High school or less	295 (10.4)
• Some or completed post-secondary	2516 (89.5)
Marital status	
• Not married	140 (5.0)
• Married/common-law	2671 (94.5)
Medications for mental health	
• Took mental-health-related medication	100 (3.5)
• Took non-mental-health-related medication OR did not take any medication	2572 (91.0)
Parity and previous history of CS	
• Multiparous with previous CS	373 (13.4)
• Multiparous with no previous CS	1041 (37.3)
• Nulliparous	1379 (49.4)
Gestational age (weeks)	
• <37	186 (6.6)
• 37–40	2256 (79.9)
• >40	383 (13.6)
Help to get pregnant	
• Yes	192 (6.8)
• No	2616 (92.6)
Pre-pregnancy BMI	
• Underweight (<18.5)	109 (3.9)
• Normal weight (18.5–24.9)	1685 (59.6)
• Overweight (25–29.9)	632 (22.4)
• Obese (30+)	331 (11.7)
Weight gain during pregnancy	
• Inadequate	765 (27.1)
• Adequate	1075 (38.1)
• Excessive	742 (26.3)
Hospital site	
• City hospital 1	1143 (40.5)
• City hospital 2	598 (21.2)
• City hospital 3	854 (30.2)
• Out-of-city hospitals	230 (8.1)
Adjusted antepartum risk score	
• High risk (>2)	573 (20.3)
• Low risk (0–2)	2252 (79.7)
Anxiety in second trimester	
• Yes	426 (15.1)
• No	2294 (81.2)
Anxiety in third trimester	
• Yes	534 (18.9)
• No	2122 (75.1)
Depression in second trimester	
• Yes	204 (7.2)
• No	2604 (92.2)
Depression in third trimester	
• Yes	185 (6.5)
• No	2528 (89.5)

BMI, body mass index; CS, cesarean section.

Bivariate analysis showed that the only mental health predictor of epidural use was anxiety in the second trimester (OR, 1.31; 95%CI, 1.02–1.69). Other factors related to epidural use were maternal age < 25 years, low education level, single marital status, use of prescribed medications for anxiety or depression, nulliparity, previous history of cesarean delivery, overweight or obesity, excessive weight gain during pregnancy, hospital setting, and antepartum risk score.

No association was observed between induction of labor and antenatal depression and anxiety. Also, there were no significant differences in weight gain during pregnancy up to 36 weeks' gestation between women with elevated anxiety or depressive symptoms and other pregnant women. Bivariate analyses showed that nulliparity, infertility treatments, previous history of cesarean delivery, overweight or obesity, excessive weight gain during pregnancy, preterm or post-term birth, hospital setting, and antepartum risk score were associated with induction of labor.

Multivariate regression for obstetric interventions stratified by each intervention showed that presence of depressive symptoms in the third trimester of pregnancy was an independent predictor of emergency cesarean delivery (adjusted OR, 2.04; 95%CI, 1.26–3.29) (Table 2). Other predictors of emergency cesarean delivery included maternal age ≥ 35 years, non-Caucasian ethnicity, being multiparous with a previous history of cesarean delivery, obesity, post-term birth, hospital site, and antepartum risk score.

No mental health variables remained in the final model for elective cesarean delivery or epidural use. Elective cesarean delivery was predicted by maternal age ≥ 35 years, being multiparous with a previous history of cesarean delivery, preterm and post-term birth, hospital site, and antepartum risk score. Nulliparity, maternal age ≥ 35 years, obesity, and

Table 2 Final multivariate multinomial regression model for mode of delivery

Factor	Assisted vaginal delivery Adjusted OR (95%CI)	Emergency CS Adjusted OR (95%CI)	Elective CS Adjusted OR (95%CI)
Maternal age (years)			
• <25	1.44 (0.84, 2.49)	0.88 (0.51, 1.53)	1.06 (0.49, 2.31)
• ≥35	1.51 (1.03, 2.22)*	1.58 (1.15, 2.16)**	2.17 (1.51, 3.12)**
• 25–34	1.00	1.00	1.00
Ethnicity			
• Non-Caucasian	1.42 (0.99, 2.03)	1.48 (1.08, 2.02)*	1.00 (0.66, 1.51)
• Caucasian	1.00	1.00	1.00
Parity and previous history of CS			
• Multiparous with previous CS	0.55 (0.24, 1.23)	2.42 (1.59, 3.69)**	52.34 (34.06, 80.42)**
• Multiparous with no previous CS	0.19 (0.13, 0.28)**	0.10 (0.07, 0.15)**	0.38 (0.24, 0.59)**
• Nulliparous	1.00	1.00	1.00
Gestational age (weeks)			
• <37	0.45 (0.19, 1.07)	1.26 (0.79, 2.01)	0.35 (0.17, 0.72)**
• >40	1.39 (0.93, 2.07)	1.72 (1.24, 2.40)**	0.34 (0.18, 0.63)**
• 37–40	1.00	1.00	1.00
Pre-pregnancy BMI			
• Underweight (<18.5)	0.82 (0.36, 1.87)	0.86 (0.41, 1.83)	1.43 (0.62, 3.31)
• Overweight (25–29.9)	1.11 (0.78, 1.59)	1.05 (0.77, 1.43)	0.98 (0.66, 1.45)
• Obese (30+)	0.45 (0.22, 0.92)*	1.87 (1.29, 2.73)**	1.35 (0.84, 2.18)
• Normal weight (18.5–24.9)	1.00	1.00	1.00
Hospital site			
• City hospital 1	0.93 (0.64, 1.35)	0.60 (0.45, 0.80)**	0.57 (0.39, 0.83)**
• City hospital 2	1.67 (1.11, 2.50)*	0.59 (0.41, 0.85)**	0.85 (0.54, 1.33)
• City hospital 3	1.00	1.00	1.00
• Out-of-city hospitals	0.22 (0.03, 1.61)	1.04 (4.45, 2.40)	3.09 (1.27, 7.49)*
Adjusted antepartum risk score			
• High risk (>2)	1.06 (0.69, 1.63)	2.61 (1.93, 3.54)**	6.87 (4.61, 10.23)**
• Low risk (0–2)	1.00	1.00	1.00
Depression in third trimester			
• Yes	1.36 (0.72, 2.56)	2.04 (1.26, 3.29)*	1.25 (0.66, 2.34)
• No	1.00	1.00	1.00

*$P \leq 0.05$; **$P \leq 0.01$. BMI, body mass index; CI, confidence interval; CS, cesarean section; OR, odds ratio.

Table 3 Final multivariate multinomial regression model for epidural and induction of labor

Factor	Epidural Adjusted OR (95%CI)	Induction of labor Adjusted OR (95%CI)
Maternal age (years)		
• <25	—	1.25 (0.84, 1.86)
• ≥35	—	1.59 (1.24, 2.03)**
• 25–34	—	1.00
Education		
• High school or less	1.43 (1.04, 1.97)*	—
• Some or completed post-secondary	1.00	—
Marital status		
• Not married	2.35 (1.45, 3.82)**	—
• Married/common-law	1.00	—
Parity and previous history of CS		
• Multiparous with previous CS	1.51 (0.90, 2.54)	0.33 (0.21, 0.54)**
• Multiparous with no previous CS	0.54 (0.45, 0.66)**	0.58 (0.47, 0.72)**
• Nulliparous	1.00	1.00
Gestational age (weeks)		
• <37	—	1.25 (0.84, 1.87)
• >40	—	3.37 (2.59, 4.38)**
• 37–40	—	1.00
Pre-pregnancy BMI		
• Underweight (<18.5)	0.66 (0.42, 1.04)	0.76 (0.44, 1.34)
• Normal weight (18.5–24.9)	1.00	1.00
• Overweight (25–29.9)	1.28 (1.02, 1.61)*	1.54 (1.21, 1.95)**
• Obese (30+)	1.56 (1.12, 2.17)**	2.09 (1.53, 2.86)**
Hospital site		
• City hospital 1	0.52 (0.42, 0.66)**	0.86 (0.68, 1.09)
• City hospital 2	0.87 (0.67, 1.14)	1.34 (1.03, 1.75)*
• City hospital 3	1.00	1.00
• Out-of-city hospitals	0.48 (0.33, 0.70)**	0.89 (0.24, 3.35)
Adjusted antepartum risk score		
• High risk (>2)	1.56 (1.20, 2.03)**	3.70 (2.89, 4.74)**
• Low risk (0–2)	1.00	1.00

*$P \leq 0.05$; **$P \leq 0.01$. BMI, body mass index; CI, confidence interval; CS, cesarean section; OR, odds ratio.

hospital site were predictors of assisted vaginal delivery with forceps or vacuum (Table 2).

Low education, single marital status, nulliparity, overweight or obesity, hospital site, and antepartum risk score were significant predictors of epidural use. Although we did not observe a bivariate association between mental health variables and induction of labor, we performed regression analyses to control for any possible confounding effect. Factors related to induction of labor included maternal age ≥ 35 years, nulliparity, overweight or obesity, post-term birth, and antepartum risk score (Table 3).

Discussion

This study examined the relation between antenatal mental health and obstetric interventions in an urban setting in Alberta, Canada. Based on the bivariate analysis, elevated levels of antenatal anxiety or depressive symptoms were associated with planned and emergency cesarean delivery and epidural use during labor. However, in regression models, after controlling for marital status, income, ethnicity, smoking, hospital site, gestational age, previous history of cesarean delivery, prepregnancy body mass index, assisted conception, and high-risk pregnancy, there were no associations observed between depressive or anxiety symptoms during pregnancy and planned cesarean delivery, epidural use, induction of labor, or assisted vaginal delivery. The only significant mental health variable associated with obstetric intervention was depression at the third trimester of pregnancy, which doubled the risk for an emergency cesarean delivery compared with absence of depression.

Several previous studies did not show any association between delivery type and antenatal mental health.[23,24,38–41] Most studies did not distinguish types of delivery. Studies that distinguished between types of cesarean delivery had findings comparable to the present results. A previous prospective observational study of 959 women evaluated the association between depressive symptoms (Beck Depression Inventory scale) and adverse obstetric outcomes; after controlling for confounding variables, the association between antenatal depression and emergency cesarean delivery was the only association among all obstetric outcomes that approached significance. The overall operative deliveries, which included cesarean and instrumental vaginal deliveries, were twofold more prevalent in women with high depression scores at 32 weeks' gestation.[21]

A literature review of 35 studies about the effect of antenatal anxiety and depression on obstetric, fetal, and neonatal outcomes suggested that a relation may exist between antenatal depression and adverse obstetric outcomes. However, methodological problems in the original studies, such as not considering potentially confounding factors, made it difficult for the reviewers to provide a definite conclusion.[25] The present findings support an association between depressive symptoms and emergency cesarean birth. The mechanism by which depression during pregnancy interferes with delivery is not well understood. Mental health disorders may affect the birth process directly by psychophysiologic pathways or indirectly by affecting maternal behavior during labor.[42] However, in the current study, there were not significant differences in reasons for emergency cesarean birth, such as fetal heart rate abnormalities, prolonged or arrested labor, and malpresentations, between the women with and without elevated depressive symptoms (data not shown).

The absence of an association between anxiety and emergency cesarean delivery in the present study is consistent with a previous study that showed a bivariate association between pregnancy-related anxiety and mode of delivery, which disappeared in logistic regression models.[23] Similar findings were noted in another study that evaluated the effect of maternal anxiety disorders on the risk of cesarean delivery.[38]

Evidence about a relation between mental health and planned cesarean delivery is scarce. In the present study, bivariate analysis showed that depressive symptoms were associated with planned cesarean delivery, but this association was not present in multivariate analysis after controlling for demographic, obstetric, and hospital site variables, and neither depression nor anxiety remained in the final model.

In a previous study, women considering cesarean delivery on demand had higher birth anxiety scores than other women, but regression analysis showed that anxiety did not predict the desire to deliver by cesarean delivery.[41] In contrast, another study showed that planned cesarean delivery and epidural analgesia during labor were higher in women who had a psychiatric diagnosis, after controlling for maternal age, marital status, socioeconomic status, smoking habits, parity, and body mass index.[15] Unlike the present study, their analysis did not account for medical risk and hospital sites and did not distinguish anxiety and depressive disorders as measured by the Primary Care Evaluation of Mental Disorders system.[15]

The strengths of the present study included the prospective design, measurement of anxiety and depression as distinct entities at two times during pregnancy, and control for the use of mental health medications, hospital site, and numerous known risk factors of obstetric intervention. The present sample is believed to be representative of the population of pregnant women in Alberta because rates of interventions in our sample were comparable to rates in the province.[43] The present conclusions may be applicable only to the relations between anxiety or depressive symptoms and obstetric interventions because self-reported scales were used to measure anxiety and depression. Therefore, these associations might be different when examining depression or anxiety disorders. For instance, Pavlov *et al*. evaluated whether a diagnosis of anxiety disorder (according to medical charts, a psychiatrist, or a family physician) predicted adverse obstetric outcome, including induction of labor, use of epidural analgesia, and cesarean delivery.[22] They reported that the likelihood of having cesarean delivery for women who had an anxiety disorder was 2.5-fold higher than that for other women.[22] Also, specific anxiety disorders, such as blood phobia, may be associated with obstetric interventions.[44] Future research may clarify the relation between severe psychiatric disorders and obstetric outcomes and the mechanisms by which depression is associated with emergency cesarean delivery.

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Disclosure

There is no conflict of interest from any of the authors to disclose.

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